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10/820,037	04/08/2004	Won-jun Koh	1572.1264	7587

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STAAS & HALSEY LLP
SUITE 700
1201 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

EXAMINER	
PECHE, JORGE O	

ART UNIT	PAPER NUMBER
3661	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/820,037	KOH ET AL.	
	Examiner	Art Unit	
	Jorge O. Peche	3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 July 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,5 and 7-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1,3,5 and 7-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Receipt is acknowledged of applicant's argument/remarks filed on June 24, 2007, **claims 1-15** are pending and an action on the merits is as follows.

Applicant's arguments with respect to **claims 1** and **10** have been fully considered but are moot in view of the new ground(s) of rejection. Applicant had cancelled **claims 2, 4, 6,** and **15.**

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims **1, 3, 5, 7-9** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Paromtchik** et **al. (Pub No.: US 2002/0027652 A1)** in view of **Bartsch et al. (Patent No.: US 6,459,955 B1).**

Regarding **claims 1, 5,** and **7,** Paromtchik discloses an instructing target positioning system for mobile body comprising:

- Light beam (light commander) projected on the surface to command a mobile robot to a new location (see page 2, par. 25; page 4, par. 55-58, Figure 1).

- A sensor unit (12a) (optical device) to receive and detect light beacon position having specified features (see page 2, par. 29; page 4, par. 68; Figure 3).
- A controller unit (12d) (imagine processor) to process sensor (12a) data, calculate the relative coordinate of positions where the light beacons reside, and generate command signals to a server unit (12b) to move the robot to a relative position (see page 2, par. 33; page 5, par 69-71; Figure 3).

However, Paromtchik fails to disclose a memory to store the command, and a command pattern formed by the reflecting which corresponds to the command, wherein the controller determines whether the reflecting trace based on the reflecting position is in accordance with the command pattern corresponding to the command stored in the memory, and outputs the command to the driving part when the reflecting trace is in accordance with the command pattern.

However, Bartsh teaches a cleaning robot apparatus comprising a data structure (program or command) stored in a memory. This data is not limited to a stored schedule of function such as the number of encoder pulse per unit time from each of the locomotion motor, the compass direction per unit time, or relative position coordinates. For instance, triangulated position from sonar, light, or other beacon means, and other stored or calculated data against which real time sensor inputs can be compared to guide a mobile (see col. 6, 34-60).

Furthermore, Paromtchik discloses a light beam having a predetermined features that are projected on the surface on which mobile bodies are to be transferred in an environment and a control unit (12d) to process sensor (12a) data and generate

command signals to a server unit (12b) to move the robot to a relative position (see page 5, par 69-71; Figure 3).

A person of ordinary skill in the art, upon reading Paromtchik's reference would have recognized the desirability of an improved control unit function for a mobile body system. Bartsh's reference teaches a memory unit to store data structure for a guiding robot by comparing sonar, light or other beacon signals with stored command. Thus, it would be have been obvious to a person of ordinary skill in the art to implement the memory unit and its process (Bartsch's invention) in an attempt to provide an improved robotic control system. Under this process, it would have been obvious to one of ordinary skill in the art to understand that the robotic control unit would drive the robot in accordance to its stored data structure by comparing the received light signal with the stored command.

Doing so would enhance a mobile robot navigation system capable to reduce navigation error due to external light source and optimize the robot performance.

Regarding **claim 3**, Paromtchik discloses a laser unit (16a) to project a laser pointer on a surface (three dimensional space) (se page 4, par 54-58; Figures 3).

Regarding **claim 8**, Paromtchik discloses a sensor unit (12a) (optical device) to detect light beacons having specified features (see page 2, par. 29; page 4, par. 68; Figure 3).

However, Paromtchik fails to disclose a mobile robot comprises a cleaner.

However, Bartsch teaches a home cleaning robot comprising a cleaner (see abstract; column 2, line 58- column 3, line 18).

Regarding **claim 9**, Paromtchik discloses a light beam having a predetermined features that are projected on the surface on which mobile bodies are to be transferred, and a control unit (12d) to process optical signal, sensor unit (12a) output (optical device), received from light beams and generate command signals to a server unit (12b) for moving the robot to a relative position, which can be enclosed in a given area (see page 5, par 69-71; Figure 3).

However, Paromtchik fails to disclose a robot system to clean an area.

However, Bartsch teaches a home cleaning robot comprising a cleaner to clean a home area (see abstract; column 2, line 58- column 3, line 18).

Given the teaching of Bartsch, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Paromtchik's invention to incorporate a vacuum cleaner in a mobile robot.

Doing so would enhance a home cleaning robot capable of learning and adaptively performing useful functions.

4. Claims **10-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Paromtchik** et **al. (Pub No.: US 2002/0027652 A1)** in view of **Bartsch et al. (Patent No.: US 6,459,955 B1).**

Regarding **claim 10**, Paromtchik discloses a method for instructing target position for mobile bodies comprising the set of:

- Providing a light beam (light commander) projected on a surface to command a mobile robot to a new location (see page 2, par. 25; page 4, par. 55-58, Figure 1).
- Having a memory, inherently located in the control unit (12a), for storing a program to correlate light beam and command signals to drive the robot to a relative position (see page 4, par. 57-58, 68; page 5, par 69-71; Figure 3).
- Detecting the position of light beam in a predetermined time interval (see page 2, par. 29; page 4, par. 68; Figure 3).

However, Paromtchik fails to teach a method of controlling a robot system comprising the steps of determining whether the reflecting trace is in accordance with the command pattern; and controlling the mobile robot to operate according to the command corresponding to the command pattern when the reflecting trace is in accordance with the command pattern.

However, Bartsch teaches a home cleaning robot comprising a data structure, (program or command) stored in a memory. This data is not limited to a stored schedule of function such as the number of encoder pulse per unit time from each of the locomotion motor, the compass direction per unit time, or relative position coordinates. For instance, triangulated position from sonar, light, or other beacon means, and other stored or calculated data against which real time sensor inputs can be compared to guide a mobile (see col. 6, 34-60).

Furthermore, Paromtchik discloses a light beam having a predetermined features that are projected on the surface on which mobile bodies are to be transferred in an

environment and a control unit (12d) to process sensor (12a) data and generate command signals to a server unit (12b) to move the robot to a relative position (see page 5, par 69-71; Figure 3). Furthermore, Paromtchik discloses a method for determining the feature of the light beacon such as color, shapes, brightness, and manners of lighting (see page 2, par. 33-34) and for controlling the motion of a robot by processing optical signal (sensor unit (12a)) received from the reflected light beam and calculating the relative coordinate of positions where the light beacons reside (see page 2, par. 33; page 5, par 69-71; Figure 3).

A person of ordinary skill in the art, upon reading Paromtchik's reference would have recognized the desirability of an improved control unit function for a mobile body system. Bartsch's reference teaches a memory unit to store data structure for a guiding robot by comparing sonar, light or other beacon signals with stored command. Thus, it would be have been obvious to a person of ordinary skill in the art to implement the memory unit and its process (Bartsch's invention) in an attempt to provide an improved robotic control system. Under this process, it would have been obvious to one of ordinary skill in the art to understand that the robotic control unit would drive the robot in accordance to its stored data structure by comparing the received light signal with the stored command.

Doing so would enhance a mobile robot navigation system capable to reduce navigation error due to external light source and optimize the robot performance.

Regarding **claims 11-14**, Paromtchik fails to disclose a method wherein when the reflecting trace is not in accordance with the command pattern and draws a line

segment, the mobile robot is controlled to move along the line segment, wherein when the reflecting trace is not in accordance with the command pattern and draws a closed loop, the mobile robot is controlled to enter an area formed by the closed loop, wherein when the reflecting trace is not in accordance with the command pattern and points to a point, the mobile robot is controlled to move to the point, and wherein a plurality of reflecting traces corresponding to a plurality of command patterns are combined and stored as a single command pattern in the memory.

However, as Paromtchik discloses a light beam having a predetermined features such as color, shapes, brightness, and manners of lighting on (plurality of command features) and a control unit (12d) capable to store in a memory a program to correlate light beam and command signals to drive the robot to a relative position (see page 2, par. 33-34; page 5, par 69-71; Figure 3), it would have been obvious to one of ordinary skill in the art at the time of the invention was made to implement light beams to draw close loop and point to point features to command the robot to enter the close loop area or approach the point feature. Furthermore, as the robot implement optical devices such infrared sensor, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to adjust the computer program to ignore/eliminate external reflected trace such as sun and lamp lights to allow the robot to complete its trajectory (moving along a line segment).

Doing so would enhance a mobile robot navigation system capable to reduce navigation error due to external light source and optimize the robot performance.

Response to Argument

In the Applicant's arguments/remarks filed on June 24, 2007, with respect to **claims 1-15** rejected under 35 U.S.C. 103(a) as being unpatentable over **Paromtchik et al. (Pub No.: US 2002/0027652 A1)** in view of **Bartsch et al. (Patent No.: US 6,459,955 B1)** have been fully considered but are not persuasive.

Regarding Applicant argument (page 6, par. 2, and page 7, par. 2), "Specifically, it is respectfully submitted that the technical feature of claim 1 of the controller determining whether the reflecting trace based on the reflecting position is in accordance with the command pattern corresponding to the command stored in the memory would not be inherent in the method of Paromtchik, which is directed increased accuracy in positioning rather than a teaching operation;" and "This finding of inherency is respectfully traversed and it is respectfully submitted that the technical feature of claim 10 of determining whether the reflecting trace is in accordance with the command pattern is not inherent in the method of Paromtchik, which is directed to increased accuracy in positioning rather than a teaching operation.

Applicant is kindly invited to consider the new ground of reject where Applicant's amended claims and remarks are addressed.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jorge O. Peche whose telephone number is 571-270-1339. The examiner can normally be reached on 8:30 am - 5:30 pm Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas G. Black can be reached on 571-272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jorge O. Peche

Patent Examiner
Art Unit 3661
September 18, 2007

THOMAS BLACK
SUPERVISORY PATENT EXAMINER